A REVIEW ON BIODIESEL PRODUCTION FROM RUBBER SEED OIL (RSO) AS AN ALTERNATIVE FUEL IN MALAYSIA

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ABSTRACT

A REVIEW ON BIODIESEL PRODUCTION FROM RUBBER SEED OIL (RSO) AS AN ALTERNATIVE FUEL IN MALAYSIA

Fossil fuel is the types of non-renewable natural resources. Provide that, rate of consumption fossil fuel is increasing every years. To make sure the rate of dependence hundred percent on uses of fossil fuel will reduce in human life, rubber seed oil (RSO) is seeing as good of alternative in context of biodiesel fuel. The purpose this review is to evaluate the potential of rubber seed oil as replacement or as substance that can mix with diesel fuel to increase the impact of human life. This review is focusing on the processing of production biodiesel from RSO and evaluate the beneficial of RSO. In addition, it also review the challenges on uses of RSO as biodiesel in Malaysia. The process of RSO is started where the rubber seed that collected from field needed to separate the kernels from shells using the cracking machine and produce the oil through oil extraction. During the *trans-esterification* process, RSO need use the acid and base/alkali catalyzed to reduce the higher FFA content and separate methyl ester from the water content using methanol. After that, the oil must pass through the filtering process to remove impurities and lastly, oil will dry through drying process before saving in the tank. The RSO actually give beneficial on environmental impact and human life because this types of biodiesel is a 'greener' energy where it is non-toxic, better quality exhaust gases, biodegradability and renewability of resources. However, application RSO as biodiesel have challenges because Malaysia facing problem to get new technology for production biodiesel diesel from RSO in large-scales. As a conclusion, RSO have bigger potential to produce biodiesel fuel and this review support the fact that the oil from rubber seed can become as one of alternative to overcome the problem is searching the sources from no-edible vegetable oils.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Human population start increasing years by years, world's growing meeting the needed for fuel from sustainable and renewable sources to replace the uses fossil fuel in transportation that increasing and same time increasing in human population. Recently, escalation on transportation and industrialization sector cause effected in highers uses in petroleum fuels. Economically, the crude petroleum fuels price today is too high and controlled by developed industry country that finding the fossil fuels. Uses the natural sources as energy in human life causing the percentage of natural resource like petroleum for transportation started to become less day by day.

Based on the Table 1 below showing the uses of fuel was 6630 Mtoe at 1980 and its increasing double to 12239 Mtoe at year 2012 because the rising population causing increasing in the global energy demands. International energy agency estimated on 2030 will happen increasing by 53% of the global energy demand (Ashraful et al., 2014). In the worlds today, major source of energy using currently is fulfilled depend on fossil fuels around 88.6%, where the petroleum (33.7%), coal (30.5%) and natural gas for 24.4%. only few percent the worlds consumption is using the nuclear energy and hydropower energy with the rate is 4.6% and 6.8%.